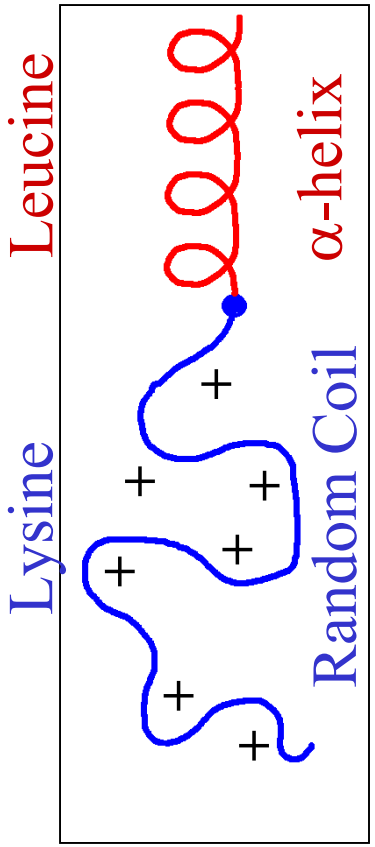
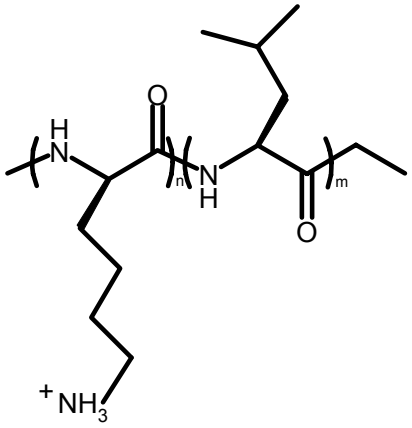
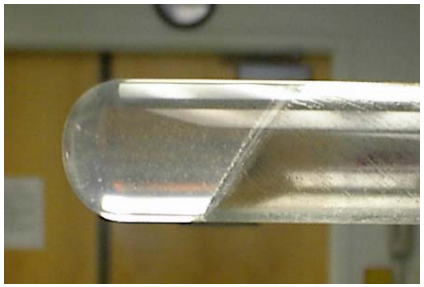
UCSB MRSEC

Lysine-block-Leucine

HydroGels From Diblocks…*Totally Unexpected*

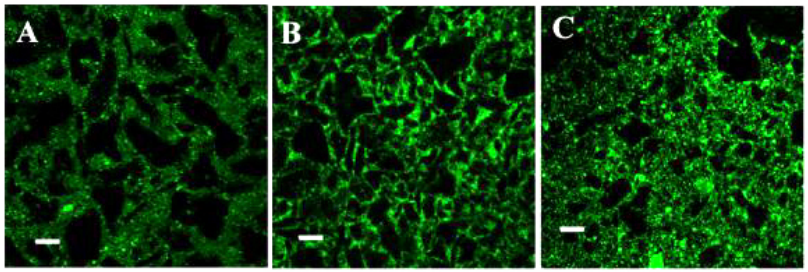






Stiff Clear Gels In DI Water Concentrations ~ 1 wt%

(confocal microscopy)



fluid **intermediate** **gel**

Unique Properties and Chemistry Creates Promising Biomedical Applications

- **Microporous network**
- **Temperature stable to ~ 90°C**
- **Retain strength with salt**
- **Rapidly recover strength following shear**

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Explanation

For quite some time we have been working on amphiphilic diblock copolypeptide systems. Using special transition metal based initiators allows us to produce these materials with unprecedented control. We have found that these many of these materials form hydrogels at low concentrations in deionized water. One of the most thouroughly studied have been diblocks of L-Lysine and L-Leucine. This behavior was quite unexpected, and to our knowledge hydrogel formation from an amphiphilic diblock copolymer is unprecedented. Based on our studies up to this point we have learned that gelation is strongly dependent on not only size and block composition, but the secondary structure of the hydrophobic block (alpha helix, beta sheet, random coil). Intrachain conformations such as these, while common in proteins, are not found in traditional synthetic macromolecules. These materials dissolve directly in water with no further treatment and many form stiff clear gels ~1wt%.

Bringing Research Into Science Classrooms (BRISC)

Conference attendees

April 18-20, 2002 San Francisco, CA

Poster session

Discussions with professors

UCSB MRSEC

Conference Attendees

71 Conference Participants

- 33 teachers
- 19 mentors
- 15 managers

33 Research Programs

- 19 states

Teacher Statistics:

Level

- 22 high school
- 7 middle school/intermediate/ jr. high
- 1 elementary

Most at public schools, 1 at private

Years Teaching Science

- 1 through 28 yrs.
- Avg. of 10 yrs.

Lysine-block-Leucine

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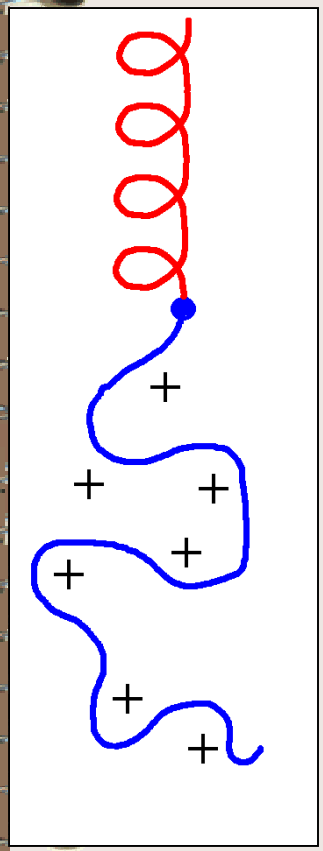

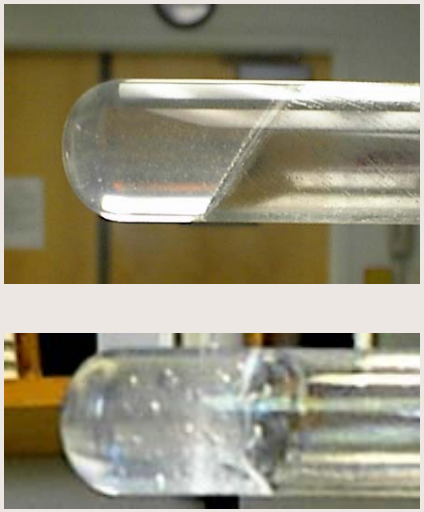

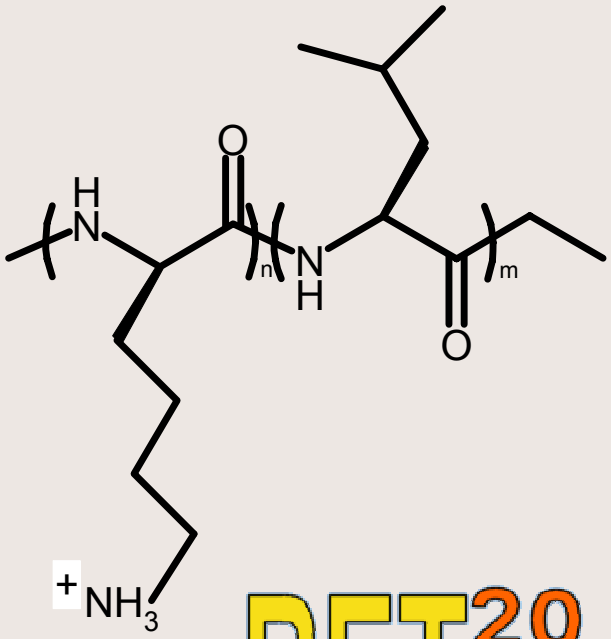

Stiff Clear Gels In DI Water

Concentrations ~ 1 wt%

RET 2002 conference

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RET 2002 conference

International Outreach to Developing Countries

The first meeting, which was held in Trieste, attracted about 50 participants from 20 developing countries, mainly from Africa and Asia. Twelve faculty from UCSB participated and full scholarships were provided for all the DC conferees. The second was held in Santiago, Chile, and focused on South America. It attracted about 150 scientists from 12 countries.

Professors Rao, Cheetham, Lund and Solórzano at the opening ceremony of the May 2002 Workshop in Santiago, Chile

20
02
conference